STEREO CASSETTE TAPE DECK

KX-77CW

INSTRUCTION MANUAL

KENWOOD

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88/12 11 10 9 8 7 6 5 4 3 2 1

Introduction

Your choice of this product indicates that you are a devotee to excellence in sound reproduction.
We appreciate your patronage and take pride in the long tradition of quality components.
So that you can get the most out of your unit, we suggest that you take the time to read through this manual before you hook up and operate your system. This will acquaint you with operating features, and system-connection considerations, so that your listening pleasure will be enhanced right from the start. You will notice that in all aspects of planning, engineering, styling, operating convenience and adaptability, we have sought to anticipate your needs and desires.
Keep this manual handy for future reference.

For your records

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your dealer for information or service on this product.
Model KX-77CW Serial Number _____

Unpacking

Unpack the unit carefully and make sure that all accessories and cables are put aside so they will not be lost.
Examine the unit for any possibility of shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.
We recommend that you retain the original carton and packing materials for use should you transport or ship the unit in the future.

WARNING NOTICE:
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DOLBY and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
Noise reduction circuit made under license from Dolby Laboratories Licensing Corporation.

Accessories

RCA Pin-plug cord 2

System control cord
(Except for some areas) 1

Contents

Caution : Read the following pages marked ⚠ carefully to keep your safety.

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Before applying power

⚠ **Caution: Read this page carefully to keep your safety.**

Important!

U.S.A., Canada, Australia, and Europe

Units shipped to the U.S.A. and Canada are designed for operation on 120 V AC only.

Units shipped to Australia are designed for operation on 240 V AC only.

Units shipped to Europe are designed for operation on 220V AC only.

These units are not equipped with an AC voltage selector switch and the discussion of such a switch that follows, should be disregarded.

All other countries

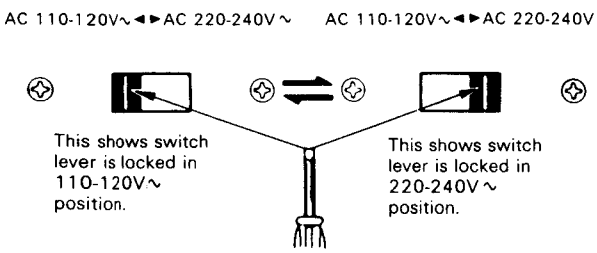
Units shipped to countries other than the above countries are equipped with an AC voltage selector switch on the rear panel. Refer to the following paragraph for the proper setting of this switch.

AC voltage selection

This unit operates on 120 volts or 220-240 volts AC. The AC voltage selector switch on the rear panel is set to the voltage that prevails in the area to which the unit is shipped. Before connecting the power cord to your AC outlet, make sure that the setting position of this switch matches your line voltage. If not, it must be set to your voltage in accordance with the following direction.

Note:

Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC voltage selector switch.


AC 110-120V~◄►AC 220-240V~
AC 110-120V~◄►AC 220-240V~
This shows switch lever is locked in 110-120V~ position.
This shows switch lever is locked in 220-240V~ position.

Move switch lever to match your line voltage with a small screw driver or other pointed tool.

AC voltage selector switch

Safety precautions

WARNING:

TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

	CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
	THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK TO PERSONS.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE APPLIANCE.

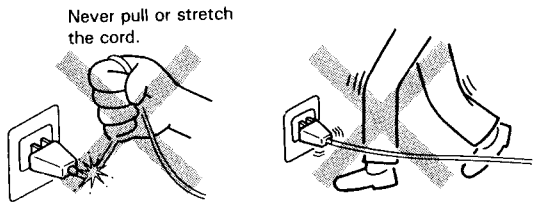
Important safeguards

⚠ **Caution: Read this page carefully to keep your safety.**

Please read all of the safety and operating instructions before operating this unit. For best results, follow all warnings placed on the unit and adhere to the operating and use instructions. These safety and operating instructions should be retained for future reference.

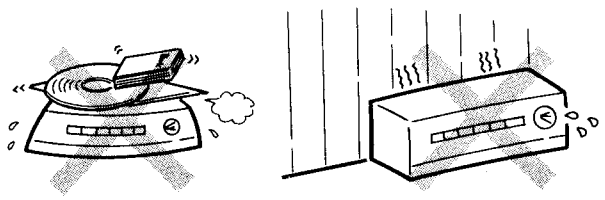
1. **Power sources** — The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

2. **Power-cord protection** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.

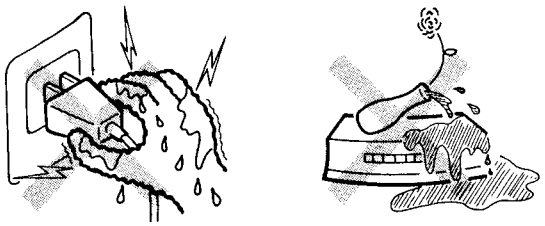


3. **Grounding or polarization** — Precautions that should be taken so that the grounding or polarization means of this unit is not defeated.

4. **Ventilation** — The unit should be situated so that its location or position does not interfere with its proper ventilation.
To maintain good ventilation, do not put records or a table-cloth on the unit. Place the unit at least 10 cm away from the walls.
Do not use the unit on a bed, sofa, rug or similar surface that may block the ventilation openings.

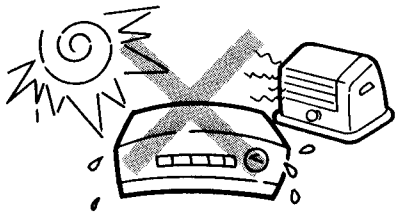


5. **Water and moisture** — The unit should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

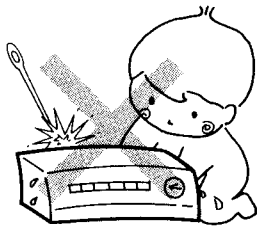


6. **Temperature** — The unit may not function properly if used at extremely low, or freezing temperatures. The ideal ambient temperature is above +5°C (41°F).

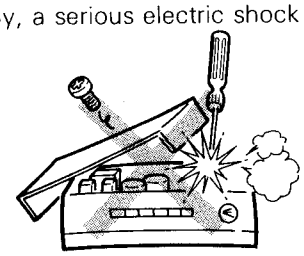
7. **Heat** — The unit should be situated away from heat sources such as radiators, heat registers, stoves, or other units (including amplifiers) that produce heat.



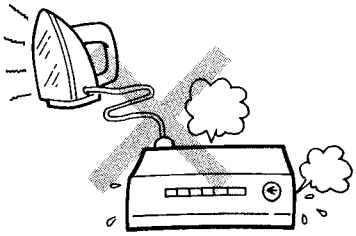
8. **Electric shock** — Care should be taken so that object do not fall and liquid are not spilled into the enclosure throuch openings. If a metal object, such as a hair pin or a needle, comes into contact with the inside of this unit, a dangerous electric shock may result. For families with children, never permit children to put anything, especially metal, inside this unit.



9. **Enclosure removal** — Never remove the enclosure. If the internal parts are touched accidentally, a serious electric shock might occur.

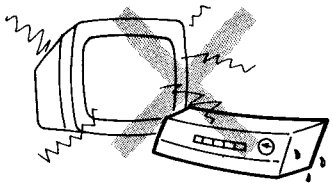


10. **AC outlets** — Do not connect other audio equipment with a power consumption larger than that specified to the AC outlet on the rear panel. Never connect other electrical units, such as an iron or toaster, to it to prevent fire or electric shock.

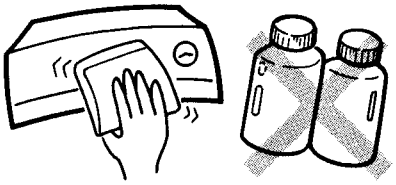


⚠ **Caution: Read this page carefully to keep your safety.**

11. Magnetic fields — Keep the units away from a source of magnetic fields such as TV sets, speaker systems, radios, motorized toys or magnetized objects.

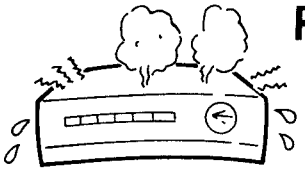


12. Cleaning — Do not use volatile solvents such as alcohol, paint thinner, gasoline, or benzine, etc. to clean the cabinet. Use a clean dry cloth.



13. Nonuse periods — The power cord of the unit should be unplugged from the outlet when left unused for a long period of time.

14. Abnormal smell — If an abnormal smell or smoke is detected, immediately turn the power OFF and pull out the power cord. Contact your dealer or nearest service station.



15. Damage requiring service — The unit should be serviced by qualified service personnel when:

A. The power-supply cord or the plug has been damaged; or

B. Objects have fallen, or liquid has been spilled into the unit; or

C. The unit has been exposed to rain; or

D. The unit does not appear to operate normally or exhibits a marked change in performance; or

E. The unit has been dropped, or the enclosure damaged.

16. Servicing — The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

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17. Outdoor antenna grounding — If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/ NFPA No. 70—1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure.

[a] Use No. 10 AWG (5.3 mm²) copper, No. 8 AWG (8.4 mm²) aluminum, No. 17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger, as a ground wire.

[b] Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 — 6 feet (1.22 — 1.83 m) apart.

[c] Mount antenna discharge unit as close as possible to where lead-in enters house.

[d] Use jumper wire not smaller than No. 6 AWG (13.3 mm²) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21(j).

18. Power lines — An outdoor antenna should be located away from power lines.

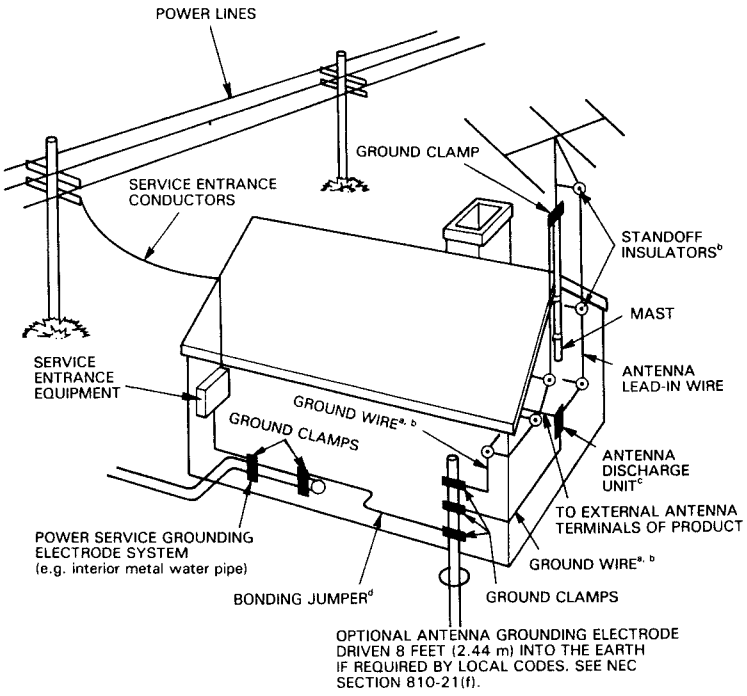

POWER LINES
GROUND CLAMP
SERVICE ENTRANCE CONDUCTORS
STANDOFF INSULATORS[b]
MAST
SERVICE ENTRANCE EQUIPMENT
ANTENNA LEAD-IN WIRE
GROUND WIRE[a, b]
GROUND CLAMPS
ANTENNA DISCHARGE UNIT[c]
TO EXTERNAL ANTENNA TERMINALS OF PRODUCT
POWER SERVICE GROUNDING ELECTRODE SYSTEM (e.g. interior metal water pipe)
GROUND WIRE[a, b]
BONDING JUMPER[d]
GROUND CLAMPS
OPTIONAL ANTENNA GROUNDING ELECTRODE DRIVEN 8 FEET (2.44 m) INTO THE EARTH IF REQUIRED BY LOCAL CODES. SEE NEC SECTION 810-21(f).

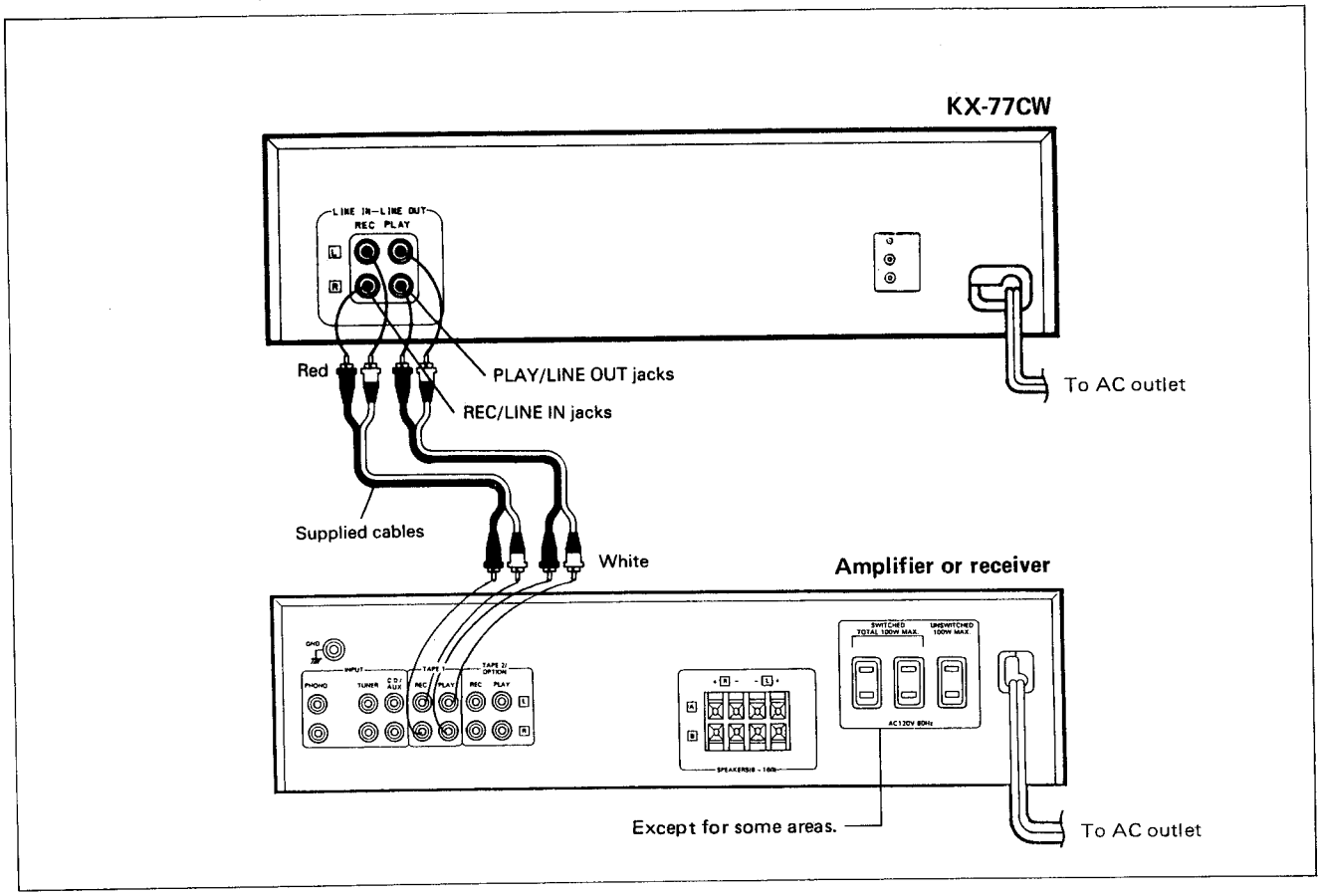
FIGURE
EXAMPLE OF ANTENNA GROUNDING ACCORDING TO THE NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 — "RADIO AND TELEVISION EQUIPMENT"

Notes:

1. Item 3 is not required except for grounded or polarized equipment.
2. Item 10 is not required except for units provided with AC outlets.
3. Item 17 and 18 are not required except for units provided with antenna terminals.

System connections

Connection to stereo amplifier or receiver



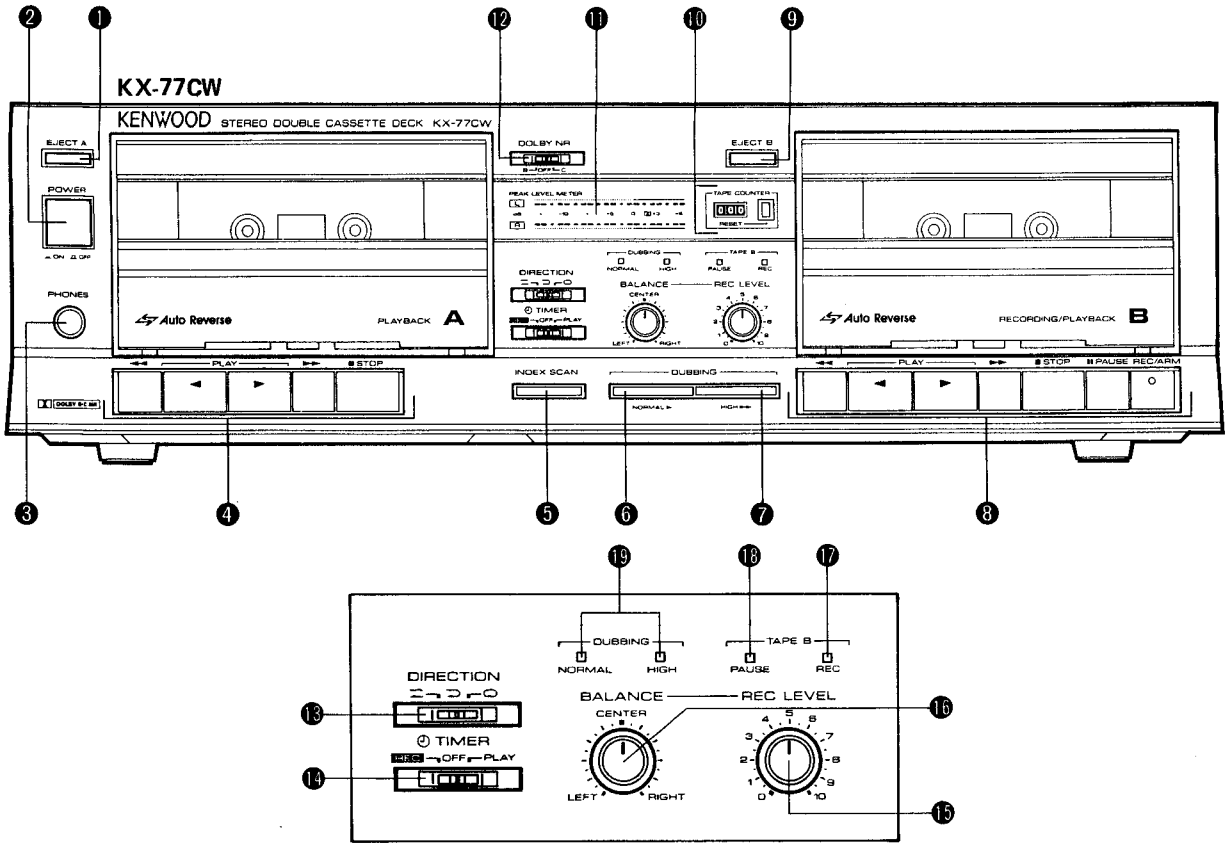
Connection by audio cords

Two pairs of red and white audio cords with standard phono plugs attached (i.e. LINE OUT cables and LINE IN cables) are provided with your KX-77CW.
The colors are to identify the right and left stereo channels; red indicates the right channel and white the left channel.
Use of these cords is recommended for optimum performance in terms of noise and frequency response.

To protect your speakers, turn off all power before making any system connections.
Make connections as follows:

1. Connect the left and right PLAY/LINE OUT plugs to the Tape Play jacks on your amplifier.
2. Connect the REC/LINE IN plugs to the Tape Rec (record) jacks on your amplifier.

Controls, indicators and connectors



❶ A deck EJECT button
Pressing this button opens the A deck cassette holder.

❷ POWER switch
Use this switch to turn the power on and off.

❸ PHONES JACK
Plug stereo headphones into this jack to monitor recordings or tape playback.

❹ ❽ A, B deck operation keys

- **Rewind key (◄◄)**

Press to rewind tape. Tape will move from the right reel to the left reel at high speed. When this key is pressed during playback, tunes are skipped in the reverse direction each time the key is pressed. When this key is pressed together with the forward play key (►), the tape is rewound and the tape is played back from the first tune of side A.

- **Fast forward key (►►)**

Press to rapidly advance the tape. Tape will move from the left reel to the right reel at high speed. When this key is pressed during playback, tunes are skipped in the forward direction each time the key is pressed.
When this key is pressed together with the reverse play key (◄). the tape is rewound and the tape is played back from the first tune of side B.

- **Reverse play key (◄)/indicator**

Press to play tape in the reverse direction (side B). When this key is pressed more than twice, the current tune is played back repeatedly (16 times). To release the current tune being played back repeatedly, press the stop key (■).
When the reverse play key (◄) is pressed with tapes loaded in both A and B decks, the unit enters relay play back mode.

- **Forward play key (►)/indicator**

Press to play the tape in the forward direction (side A). When this key is pressed more than twice, the current tune is played back repeatedly (16 times). To release the current tune being played back repeatedly, press the stop key (■).
When the forward play key (►) is pressed with tapes loaded in both decks, the unit enters relay playback mode.

- **Stop key (■)**

Press to stop tape travel. This will also release the previous mode of operation.

- **REC/ARM key (only B deck)**

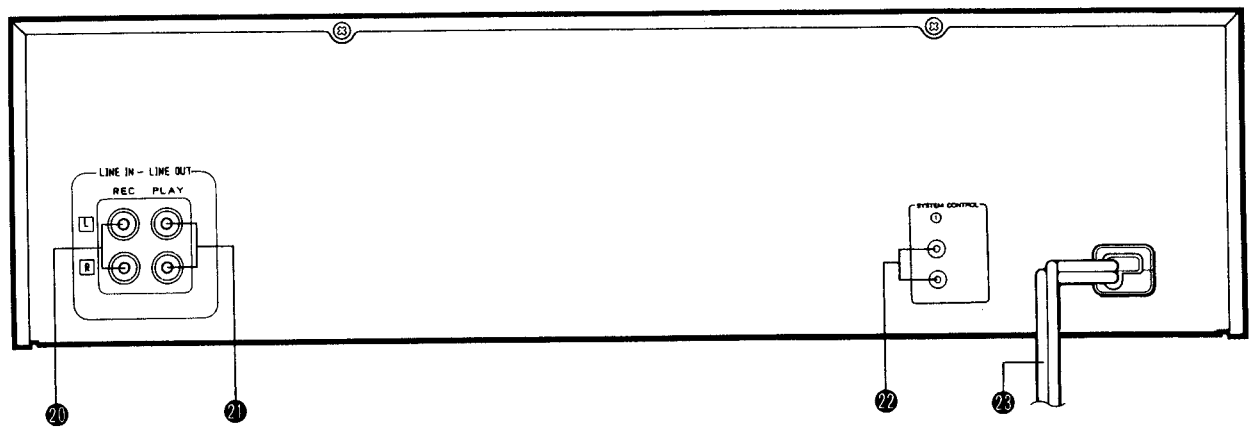
Press this key to start recording. The REC indicator lights. The recording mode can only be entered from the stop mode.

- **Pause key (II) (only B deck)**

When this key is pressed during playback, recording, dubbing or high-speed dubbing, the unit temporarily stops.
To release playback pause mode, press the play key.
To release rec pause mode, press the REC/ARM key.

❺ INDEX SCAN key (only A deck)
This key is for A deck only.
Press this key to select the desired turn. When this key is pressed, the beginning of each tune is played back for about 10 seconds.

❻ Normal-speed dubbing key (NORMAL ►)
When this key is pressed, the normal dubbing indicator lights and dubbing from Deck A to Deck B starts.



⑦ High-speed dubbing key (HIGH ►►)
When this key is pressed, the high-speed dubbing indicator lights and high-speed dubbing from Deck A to Deck B starts.

⑧ See No. ④ on page 6.

⑨ B deck EJECT button
Pressing this button opens the B deck cassette holder.

⑩ TAPE COUNTER and reset button
The TAPE COUNTER provides a means of locating passages on the tape. When starting a recording, set the counter 000 by depressing the reset button.

⑪ PRAK LEVEL METER
Indicate the peak values of the input levels for recording or the output levels for playback.

⑫ DOLBY NR switch
To record or play back a tape with Dolby NR, set the switch to B or C.

⑬ DIRECTION switch
Normal mode (⇄) — In this position, one side playback or recording is possible. When the end of tape is reached, the operation mode is released and the tape stops.
When the tape reaches its end in playback mode, the tape loaded on the other deck is played back.
Reverse mode (⇄) — In this position, both sides can be played back or recorded. In this mode, recording and playback do not automatically change from side B to side A.
Endless mode (↻) — In this position, tape is played back repeatedly. DPSS, index scan are carried out twice (2 sides).
In endless mode (↻), relay playback is not possible.

⑭ TIMER stand-by switch
This switch is used along with an audio timer when an unattended recording or timer-playback is performed. Set this switch to the REC position for unattended recording, to the PLAY position for timer-playback and to the OFF position when the timer is not used. For timer operation, B deck has the priority.

⑮ REC LEVEL CONTROL knob
Adjust the right and left recording levels, with these knobs.

⑯ Balance adjust knob for L/R recording levels
This adjusts the balance of recording levels so that these of L/R channels are equal.

⑰ REC indicator
This indicator lights during recording or dubbing.

⑱ PAUSE indicator
This indicator lights when the pause key (▮▮) is pressed.

⑲ Dubbing indicators
NORMAL — Lights when the normal speed dubbing key is pressed.
HIGH — Lights when the high speed dubbing key is pressed.

⑳ REC/LINE IN jacks
Connect to the Tape Rec jacks of your amplifier using the audio cables (supplied).

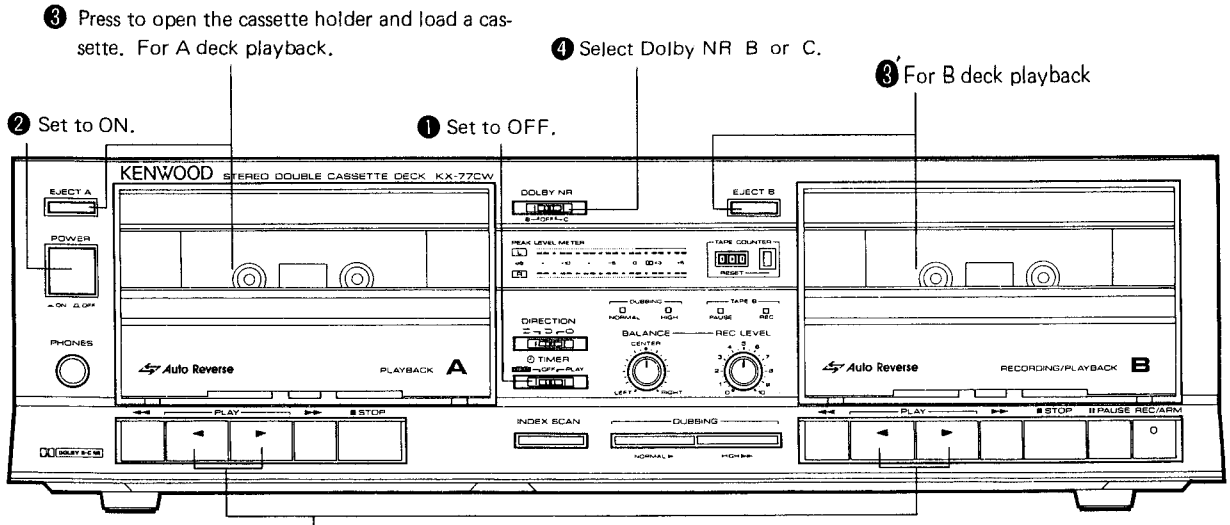
㉑ PLAY/LINE OUT jacks
Connect to the Tape Play jacks of your amplifier using the audio cables (supplied).

㉒ Jack ① (For system control)
Connect to the system control of audio components.
(Except for some areas.)

㉓ Power cord
Plug in to a convenient AC outlet.

Tape playback

Proceed in the order of numbers in the illustration.


❸ Press to open the cassette holder and load a cassette. For A deck playback.
❹ Select Dolby NR B or C.
❸' For B deck playback
❷ Set to ON.
❶ Set to OFF.
KENWOOD
Auto Reverse
PLAYBACK A
Auto Reverse
RECORDING/PLAYBACK B
❺ For A deck playback, press A deck play key (►). For B deck playback, press B deck play key (►). To play back a tape in the reverse direction press the reverse play key (◄).
❻ Use the volume control of the amplifier to adjust the sound level.

Forward DPSS selection

When the tune you want to listen to is before or after the current tune with the tape running, just pressing the fast forward (►►) or rewind (◄◄) key several times selects the desired tune.

1. When the desired tune is before the current tune, press the rewind key (◄◄). When the rewind key (◄◄) is pressed once, the tape is rewound to the beginning of the current tune. When the desired tune is the fourth one before the current tune, press the rewind key (◄◄) 5 times.
2. To select a tune after the current tune, press the fast forward key (►►). The number of tunes that will be skipped will equal the number of times the key is pressed.
   When the fast forward key (►►) is pressed once, the tape is rapidly advanced to the beginning of the next tune. When the desired tune is the fourth one after the current tune, press the fast forward key (►►) 4 times.

- This function is applicable to sixteen tunes following the current tune.
  If the rewind key (◄◄) is pressed just after a tune is played or the fast forward key (►►) is pressed near the end of a tune, a tune of the next program may possibly be skipped.

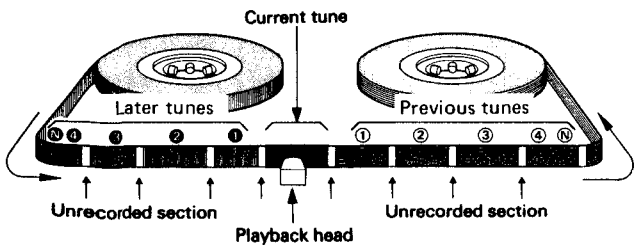
Reverse DPSS selection

When the tune you want to listen to is before or after the current tune with the tape running, in the reverse direction, just pressing the fast forward (►►) or rewind (◄◄) key several times selects the desired tune.

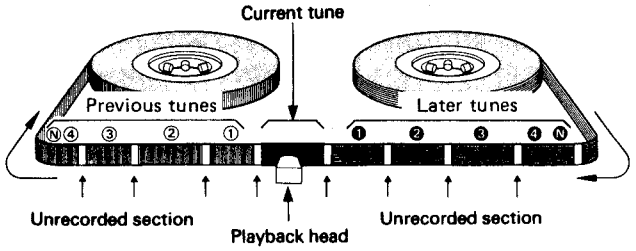
1. When the desired tune is before the current tune, press the fast forward key (►►). When the fast forward key (►►) is pressed once, the tape is rewound to the beginning of the current tune. When the desired tune is the fourth one before the current tune, press the fast forward key (►►) 5 times.
2. To select a tune after the current tune, press the rewind key (◄◄). The number of tunes that will be skipped will equal the number of times the key is pressed.
   When the rewind key (◄◄) is pressed once, the tape is rapidly advanced to the beginning of the next tune. When the desired tune is the fourth one after the current tune, press the rewind key (◄◄) 4 times.

- This function is applicable to sixteen tunes before the current tune.
  If the rewind key (◄◄) is pressed just after a tune is played or the fast forward key (►►) is pressed near the end of a tune, a tune of the next program may possibly be skipped.

Forward DPSS selection (►)



Reverse DPSS selection (◄)



Note:

Since the DPSS circuit functions by detecting the non-recorded section of more than approx. 4 seconds between tunes, the following tapes may cause the DPSS not to work properly, be careful.

1. Tapes having more than 4 seconds interval during selection such as conversation.
2. Tapes having extremely low-level portions or non-recorded sections during tunes such as classical music.
3. Tapes having too noisy section recorded between tunes.
4. Tapes having less than 4 seconds blank sections between tunes.
5. Tapes recorded in extreme low levels.

Note:

The DPSS selection will be repeated twice (2 sides) with the MODE switch set to the reverse mode (⇄) or to endless mode (↻).

Repeat playback

1. To repeat the tune currently being played, press the forward play (▶) or reverse play (◀) key again according to the direction of tape travel.
2. When the tune which you want to hear repeatedly is not the current tune, select the tune by DPSS selection and press the forward play (▶) or reverse play (◀) key again in playback mode according to the direction of tape travel.
   When the tape is in stop mode, press the key twice.
3. When the current tune has been repeated 16 times, the unit goes back to the normal playback mode.
4. To release the repeat play mode, press the stop key (■).

Auto reverse play back

1. Set the DIRECTION switch to the reverse mode (⇄).
2. Press the forward play key (▶). Both sides are played back, then the other deck is set to playback mode.

Note:

The direction of the tape travel is indicated by the FORWARD/REVERSE indicators.

Both sides repeat playback

1. Set the DIRECTION switch to the endless mode (↻).
2. Press the forward play (▶) or reverse play (◀) key according to the direction of tape travel.
3. Both sides are played back continuously.

Rewind playback

1. To rewind playback in the forward direction (side A), press the forward play key (▶) and rewind key (◀◀) simultaneously. The tape is rewound to the left reel and played back from the first tune on side A.
2. To rewind playback in the reverse direction (side B), press the reverse play key (◀) and fast forward key (▶▶) simultaneously. The tape is rewound to the right reel and played back from the first tune on side B.

Index scan (Only A deck)

Press the INDEX SCAN key. The tape is rapidly advanced while the beginning of each tune is played back for about 10 seconds.

Relay playback

Relay playback between A deck and B deck.

1. Load the tapes in both A and B decks. When A deck forward play key (▶) or reverse play key (◀) is pressed, relay playback starts from A deck. When B deck forward play key (▶) or reverse play key (◀) is pressed, relay playback starts from B deck.
   When the tape reaches its end, the tape is rewound to the beginning, and the other tape starts playback (in normal mode (⇄)).
2. To release relay playback, press the stop key (■) of the deck in playback mode.
3. In reverse mode (⇄), both is sides are played back from A side, and the other deck enters both-side playback mode.
   In endless mode (↻), relay playback is not possible.

Note:

When the forward play key (▶) or reverse play key (◀) is pressed with tapes loaded in both A and B decks, the unit is automatically set to relay playback mode.
To play back one deck only, do not load a tape in the other deck.

DIRECTION switch keys (ON)	Forward play key (▶) or Reverse play key (◀)
⇄	One-side relay playback (endless)
⇄	Both-side relay playback (endless)
↻	Both-side full repeat playback (endless) No relay playback

Repeat and relay playback

Tape recording

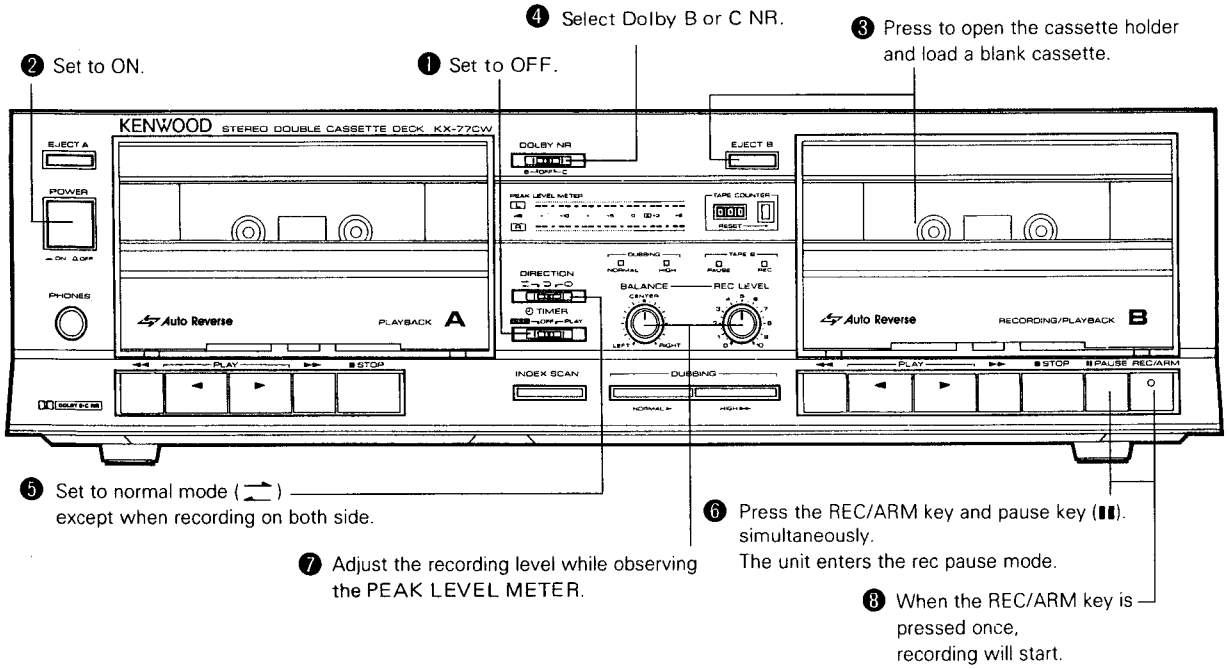
Recording level

The recording level is strongly related to sound quality, distortion, S/N ratio, frequency response, etc. When it is very high, S/N ratio is improved but distortion and frequency response are degraded. When it is too low, the opposite results. The best recording levels can be determined by referring to the PEAK LEVEL METER. It is easy to record a disk or FM broadcast because their sound level is limited to a certain extent. However, it is difficult to set the recording level when recording live sounds or when recording from an open reel tape on which live sound is recorded because the sound level varies within a very wide range.

Notes:

1. The optimum recording level varies according to the sound source and the type of tape. Find out the optimum recording level by recording and playing several times.
2. PEAK LEVEL METER readings during playback may differ from those observed during recording. This is related to tape sensitivity and is no problem.

Preceed in the order of numbers in the illustration.



How to make a blank section

To obtain the best performance from DPSS, blank sections are essential. Leave blank sections as follows:

1. Press REC/ARM key twice. A blank sections of about 4 seconds is made and the unit enters the rec pause mode. During recording from the turntable player, the unit may not automatically enter auto rec mute mode. At this time, press the REC/ARM key, then press the same key again slowly.
2. To make a blank section of more than 4 seconds, keep the REC/ARM key pressed the second time. A blank section equals to the time the key is kept pressed is made. When the REC/ARM key is released, the unit enters the rec pause mode.
3. To make a blank section of less than 4 seconds, press the REC/ARM key twice and press the REC/ARM key again within 4 seconds. The unit enters the recording mode. When the pause key (▮▮) is pressed after the REC/ARM key has been pressed twice, the unit enters the rec pause mode.

Quick re-recording

If you accidentally include unwanted material while you are recording an FM broadcast, etc., you can go back to the beginning of that section of tape to start over again by using the following procedure.

A blanc section of more than 4 seconds is necessary before the beginning of the tape recording.

1. When the tape is moving in the forward direction, press the rewind key (◀◀). The recording stops, the tape is rewound to the beginning of the recording, a blank section of about 2 seconds is left and the tape stops.
2. When the tape moves in the reverse direction, press the fast forward key (▶▶). The recording stops, tape is rewound to the beginning of the recording, a blank section of about 2 seconds is left and the tape stops.
3. To resume recording, make a 4-second blank section by pressing the REC/ARM key twice, then press the same key again.

Note:

If you use this function at the beginning of the recording, this will not often operate normally.

Both side recording

Continuous recording from side A to side B is possible.

1. Set the DIRECTION switch to the reverse mode (⊃).
2. If the FORWARD indicator is not lit, press the forward play key (►) to change the tape running direction and press immediately the stop key (■).
3. Press the REC/ARM key to start recording. When the tape reaches the end of side A, the recording is automatically continued on side B.

Notes:

1. Continuous recording from side B to side A is not possible.
2. When continuous recording is not came out, always set the DIRECTION switch to the normal mode (⇄). Failure to do so will sometimes erase a valuable recording on side B.
3. Tape running will stop even in the endless mode (⟲) when recording on the other side stops.

Dubbing

1. When the dubbing key is pressed, dubbing from A to B deck starts.
2. When the dubbing key is pressed, during dibbing, dubbing is automatically muted and the unit enters rec pause mode, leaving about 4-second blank section (6 seconds during hith speed dubbing) on the tape.
3. When an A deck operation key is pressed during dubbing, A deck enters the mode of the pressed key, and B deck stops dubbing temporarily, leaving about 4-second blank section (6 seconds during high speed dubbing).
   To restart dubbing, press the dubbing key.
4. When a B deck operation key is pressed during dubbing, the dubbing mode is released, B deck enters the mode of the pressed key and A deck stops.
5. During dubbing, the dubbing indicator and the REC indicator light. When the DUBBING key is pressed during dubbing, the indicators flash. When the deck enters rec pause mode, the dubbing indicator, REC indicator and PAUSE indicator light.

High-speed dubbing

To make the dubbing speed increased, press the high-speed dubbing key (HIGH ►►).

Notes:

1. Dubbing is not possible unless both A and B decks are in the stop mode.
2. During dubbing, it is not possible to adjust the recording level. So load the tape recorded with the optimum recording level.
3. During dubbing, regardless of ON/OFF of Dolby NR switch, you cannot change Dolby switch. (The same tape as the one in A deck is made.)
   e.g. When the tape in A deck is recorded with Dolby B, the tape in B deck will be recorded with Dolby B.
4. Dubbing from the dubbed tape degrades the sound quality. It is therefore recommended to load the original tape in A deck.
5. TV noise may be recorded during high-speed dubbing if TV is near the system. In this case, keep TV away from the system.

Timer stand by operation

By using the built-in TIMER STAND BY mechanism in combination with an audio timer (available from many dealers), the deck begins to record or play at any desired time.

Unattended recording

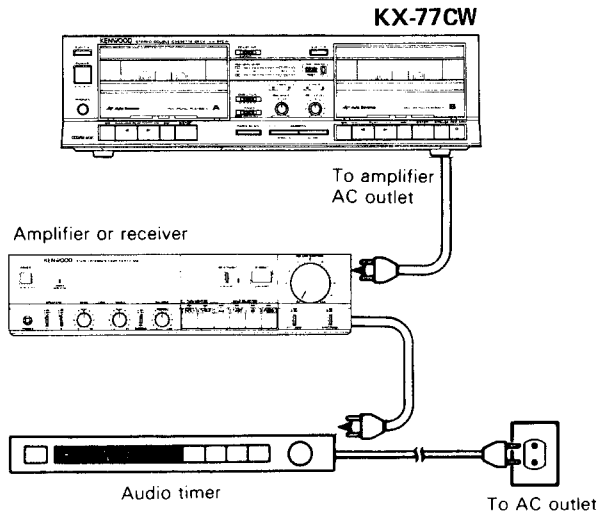
1. Connect the power cords to the components and set the timer so that power is supplied to each component. (Timer setting procedures vary with the type of timer used. Follow the instructions of the timer's manual.)
2. Turn on the power switches of the components to be used for recording.
3. Tune on the station desired and set the record level.
4. Set the volume control of the amplifier to its minimum setting.
5. Set the timer to the required time referring to the timer's instruction manual so that the power will be switched ON at the preset time.
6. Load a tape for recording into deck B or deck A. The relay recording from deck B to deck A can be also setting the DIRECTION switch to normal mode (⇄) or reverse mode (⊃) position.
7. Set the DUBBING speed key to NOR. (▯) (Normal).
8. Set the DOLBY NR switch to ON if the recording is to be made using the noise reduction system.
9. Set the TIMER switch to REC.
10. Power to the components will be switched ON at the preset time and recording will start.
11. Recording stops when the tape end is reached.

Note:
To ensure that the automatic shut off switch operates before the power is shut off, set the timer so that it operates for a little longer than the playing time of the tape.

Timer-controlled playback

1. Connect the timer as described for "Unattended recording".
2. Set the timer so that power is supplied to each components.
3. Turn on the power switches of the components used for playback.
4. Load a recorded tape and set each switch referring to "Tape playback".
5. Adjust the volume control of the amplifier.
6. Rewind the tape to the start.
7. Set the timer to the required time.
8. Set the TIMER switch to PLAY.
9. The tape will automatically start playback at the preset time.

Notes:
1. Do not use a timer for the dubbing procedure.
2. Use either A or B deck for a timer-playback.



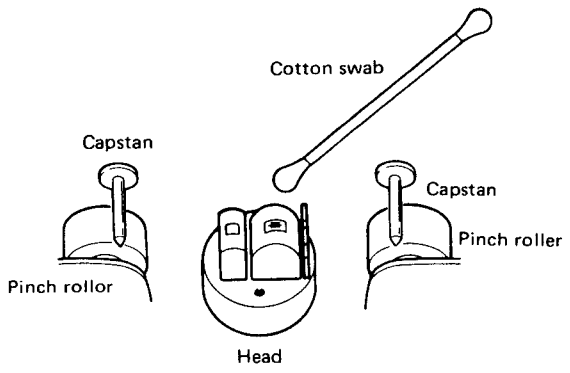
Maintenance

As the tape rubs against the heads during recording and playback, oxide debris from the tape accumulates on the heads, guides, and pinch roller. To maintain the optimum recording and playback performance, periodically clean the entire tape path, including the heads (about every 10 hours of use).

Cleaning the heads section

1. Press the EJECT button and the cassette holder will slide forward.
2. Turn on POWER. Clean the heads, pinch roller and capstan with a cotton swab slightly dampened with cleaning solvent (or denatured alcohol).

Note:
The heads and guides in the tape path are precisely adjusted. Do not exert excessive pressure on any parts while cleaning.



Head demagnetization

The magnetized record/play head may degrades the sound quality and increases the noise. In this case, use the commercially available Head Eraser to demagnetize the head.

In case of difficulty

What appears to be a malfunction may not always be serious. First, check the following items before consult the service personnel.

Symptom	Causes	Remedy
Recording is impossible by pressing the REC/ARM key.	1. The safety tab provided with the cassette shell is broken. 2. Cassette holder is not closed completely. 3. Record input level knob is set to minimum position.	1. Use the cassette with its safety tab. (When recording using the cassette with the tab broken, block hole with adhesive tape.) 2. Close the cassette holder completely. 3. Refer to the "Tape recording" section.
Sound is not heard even when the playback key is pressed.	1. Audio cords are connected incorrectly. 2. Head is dirty. 3. Tape cannot be advanced caused by uneven winding. 4. Unrecorded tape is used.	1. Refer to the "Connections" section. 2. Refer to the "Maintenance" section. 3. Replace the cassette. 4. Use the recorded tape.
Sound is husky or high frequency notes are not heard.	1. Head is dirty. 2. Tape is damaged.	1. Refer to the "Maintenance" section. 2. Replace the cassette.
Sound is distorted.	1. Recording level is too high when recording. 2. Source itself is distorted.	Refer to the "Tape recording" section.
Too noisy	1. Head is magnetized. 2. Noise is inducted from the external equipment. 3. Recording level is too low. 4. Dolby NR encoded tape is played back with Dolby NR switch OFF.	1. Demagnetize the head using head eraser. 2. Keep the unit away from other electrical equipment. 3. Refer to the "Tape recording" section. 4. Set the Dolby NR switch to ON. It is recommended to perform recording always using the Dolby NR switch ON.
Sound is wow condition.	1. Capstan or pinch roller is dirty. 2. Tape is wound unevenly.	1. Refer to the "Maintenance" section. 2. Wind the tape again by fast-forwarding or rewinding.
Playback or recording starts when the power is turned ON.	Timer stand-by switch is set to PLAY or REC position.	Set the Timer Stand-by switch to OFF when the timer-playback or timer-recording is not used.
The unit does not function even when the operation key is pressed.	1. The operation key is pressed immediately after the power is turned on (before 3 seconds have elapsed). 2. Cassette tape is not loaded. 3. The tape cannot be wound (advanced) because the tape is wound unevenly.	1. After 3 seconds have elapsed since the power is turned ON, press the operation key. 2. Load a cassette. 3. Replace the cassette.
DPSS does not function correctly.	The unsuitable tape having shorter blank section between tunes is used.	Refer to the "DPSS" section.
Operation is impossible by pressing any operation keys.	Cassette holder is not closed completely.	Close the cassette holder completely.

Note:

- **Owing to the type of a cassette tape, the noise will be sometimes heard when the tape stops automatically. It is not a malfunction of the unit, but to ensure the certain transport of the tape.**
- **The 120-minute cassette tapes are unrecommendable because they are too thin and may be demaged by the repeated use.**

Specifications

Type	Stereo Double Reverse Full Logic Cassette Deck with Dolby B. C NR system
Track System	4-track, 2-channel stereo/mono, recording/playback
Recording System	AC bias system (Bias frequency: 105 kHz)
Erasing System	AC system
Tape Speed	4.76 cm/sec (1-7/8 ips)
Heads	Hard permalloy playback/record head x 1 Hard permalloy playback head x 1 Double gap ferrite erasing head x 1
Motor	Electronically-controlled DC motor x 2
Fast Winding Time	Approx. 110 seconds with C-60 tape
Frequency Response:	
Normal Tape	20 Hz to 15,000 Hz (30 Hz to 14,000 Hz, ±3 dB)
CrO_2 Tape	20 Hz to 16,000 Hz (30 Hz to 15,000 Hz, ±3 dB)
Metal Tape	20 Hz to 16,000 Hz (30 Hz to 15,000 Hz, ±3 dB)
Signal-to Noise Ratio:	
Dolby C Type NR ON	72 dB (Normal tape)
Dolby B Type NR ON	65 dB (Normal tape)
Dolby NR OFF	57 dB (Normal tape)
Harmonic Distortion	Less than 0.6% (at 1 kHz, 0 dB with normal tape)
Wow and Flutter	0.08% (W.R.M.S), ±0.22% (DIN)
Input sensitivity/Impedance:	
LINE x 2	77.5 mV/50 kohms
Output Level/Output Impedance:	
LINE x 2	270 mV/3.9 kohms
Headphones x 1	0.2 mW/8 ohms
Power Consumption	25 W
Dimensions	W: 420 mm (16-9/16") H: 119 mm (4-11/16") D: 266 mm (10-15/32")
Weight (Net)	5.3 kg (11.7 lb)
Reference Tapes	Normal: KENWOOD ND-60 CrO_2: KENWOOD CD-60 Metal: KENWOOD MD-60

Note:

We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.